ACCELERATED ACTION PLAN

FOR

INTER-AGENCY AGREEMENT

UNDERGROUND STORAGE TANKS

CONTAINING RCRA-REGULATED

MATERIALS

Revision 0
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ACCELERATED ACTION PLAN FOR INTER-AGENCY AGREEMENT (IAG) UNDERGROUND STORAGE TANKS (USTs) CONTAINING RCRA-REGULATED MATERIALS

Introduction

The Kaiser Hill (KH) team recently reviewed all the tanks currently listed in the Inter-Agency Agreement (IAG) to determine which of these tanks were underground storage tanks (UST) that contain, or may have contained, RCRA-regulated material. The main concern was that some of these tanks are being infiltrated by groundwater and are potentially impacting surrounding soils and groundwater. KH reviewed 84 tanks and associated equipment and determined that 34 of the tanks listed in the IAG at one point contained RCRA-regulated material. It was later determined that 27 of the tanks were either removed; rinsed, painted and closed; located in buildings; or were empty.

Purpose

The purpose of this document is to outline accelerated activities intended to reduce the risks posed by each of these tanks to human health and the environment in the most expedient and cost effective manner possible.

Scope

The scope of this plan is limited to six underground IAG storage tanks located outside buildings that contain materials regulated by RCRA and/or CERCLA which require accelerated actions to be protective of human health and the environment.

Tank 4, located east of Building 443 and in Individual Hazardous Substance Site (IHSS) 129, also meets the criteria for inclusion in this plan. However, this tank is being addressed by another accelerated action project planned for fiscal year (FY) 1996 which includes three other tanks located in IHSS 129. The IHSS 129 accelerated action includes activities (i.e., source removal to achieve risk reduction) similar to those described in this plan. This tank has been omitted from this plan to avoid unnecessary duplication of effort.

Tank's Regulatory Status

The Interagency Agreement (IAG) is an Order on Consent and a Federal Facilities Compliance Agreement which directs compliance for these tanks (and other contaminated sites). The IAG Tank's regulatory status is contained in Part 4 of that agreement and is a combination of the CERCLA and RCRA corrective actions as well as the Colorado Hazardous Waste Act (CHWA) to the extent specified:

"Therefore the parties intend that compliance with activities covered by this Agreement will be deemed to achieve compliance with CERCLA, 42 U.S.C. Subsection 9601 et seq.: to satisfy the corrective action requirements of Section 3004(u) and 3004(v) of RCRA, 42 U.S.C. Subsection 6928, for interim status facilities; the closure and corrective action requirements of CHWA; and to meet or exceed all applicable or relevant and appropriate Federal and State laws and regulations, to the extent required by Section 121 of CERCLA, 42 U.S.C. Subsection 9621."

Assumptions

For the purposes of this accelerated action plan:

1. The removal of the tanks' contents and the rinsing of the tanks is considered a routine activity and will not require development and approval of any additional IAG documentation (e.g., PAM, IM/IRA).

2. Tank rinsing operations may in some cases suspend sludges in solutions. These activities are considered routine and are not intended to dilute the tanks contents in order to avoid regulation. All solutions will undergo treatment at permitted facilities at the Site.

3. The tanks liquid contents and rinsates will be treated at existing RFETS treatment facilities including Buildings 374, 774, or 891. No modifications to RCRA interim status, the Part B Permit or the OU-1 IM/IRA will be required. Sludges removed from the tanks will be containerized and stored on Site pending appropriate characterization and/or treatment.

4. The rinsates from each tank will be sampled and analyzed to document the extent of contamination remaining. This data obtained from laboratory analysis will be reviewed in the future prior to final remediation to determine the need for any further action. Appendix I includes a description of the rinsate sampling strategy and the contaminants of concern for analytical purposes.

5. The draining and rinsing of tank supply and return lines is not within the scope of this project; however, where feasible piping will be rinsed from the point it

enters the building back into the tank. At a minimum, all tank piping connected to the tanks will be capped to prevent future attempts to introduce materials into the piping and tanks.

6. In the event that groundwater infiltration occurs after the final rinsate has been removed but prior to the commencement of foaming operations, this groundwater will be treated at the same facility which treated the original tank contents and rinsate. This groundwater will not be sampled and analyzed unless required by the waste acceptance criteria for the treatment unit.

7. The filling of the tanks with an inert material (i.e., closed-cell foam) will be considered an accelerated action (IAG I.B.10.b.) requiring, at a minimum, the development and approval of a Proposed Action Memorandum (PAM). Current plans call for the development of a single PAM which will generically address the filling of each tank or structure with closed-cell foam.

NOTE: The information contained in this tank management plan is based on the best data available at this time. Once final investigations and activities commence, conditions, information and actions may change, resulting in a possible need to re-evaluate the proposed actions contained herein. The Colorado Department of Public Health and Environment (CDPHE), the United States Environmental Protection Agency and DOE, RFFO will be notified prior to making any significant changes to this plan.

Overview of Proposed Actions

Several discussions have taken place between KH, RFFO, and CDPHE regarding the interim and final management of these tanks. For those tanks which were initially identified in previous drafts of this plan for removal, an interim measure is being proposed. Existing tank contents will be removed, the inside of the tanks will be rinsed, and the rinsate will be sampled and analyzed. Each tank will then be evaluated to determine if a chemically stable, closed-cell foam should be applied to the interior of the tanks. The decision to fill a tank with foam will primarily be based upon the potential for groundwater/surface water infiltration and tank integrity. Tank foaming is a common construction practice and is a more practical alternative than permanently closing or removing these particular tanks at this time.

KH believes this tank maintenance activity addresses the immediate concern of groundwater infiltration while the final remediation or consequences of removal are explored. The applied foam will prevent any additional inventory from being placed

into the tanks either through the fill pipe or through infiltration of groundwater. The foaming of the tanks will not significantly hinder the final remediation of the IHSSs. Final remediation of the IHSSs will be addressed by DOE, RFFO at a later date.

The following summary describes the background and characterization of the waste in each of the six tanks in addition to the planned actions to be taken. To facilitate tank identification by all parties involved, both a Plan name which is commonly recognized by CDPHE enforcement staff and the IAG designation are provided.

1.0 TANKS 2 and 3 Building 441
OU13, IHSS 122, Underground Concrete Tanks (Bldg 441)

Background

Tanks 2 and 3 are interconnected tanks located along the south wall of Building 441 near its southwest corner. Both tanks were installed in 1952 and removed from service in 1982. Tank 2 is an underground concrete tank divided into two concrete vaults which partially underlies Building 441. Tank 3 refers to a 3000 gallon concrete vault which is interconnected with Tank 2. A 3200 gallon carbon steel aboveground tank, which is located immediately above the vaults, has hampered earlier field investigations. As part of this accelerated action, a field investigation will be conducted to determine the condition and contents of Tanks 2 and 3. Any activities associated with the aboveground tank are not considered within the scope of this plan.

Characterization

These tanks reportedly received waste streams from Building 122 (the Medical facility), Building 123 (the Health Physics Analytical Laboratory) and Building 441 (the Analytical Laboratory). Waste streams that were sent to these tanks included acids, bases, metals, organics, radionuclides, thiocyanate, ethylene glycol, trace PCBs, bleach, soap, blood, and hydrogen peroxide. Tank 3 reportedly last stored ammonia after storing several other wastes. Historical information indicates one of the vault floors is covered with limestone to act as a neutralizing agent. This material is considered integral to the tank and will not be removed.

Evaluations of the area indicate that Tank 2 may have remaining inventory in it based upon inspections of T-2 vault chambers. The actual T-2 tank was inaccessible. Reports indicate that there is 6 inches of liquid in the north and south chambers of the T-2 vault and, three feet of liquid in the center of the vault. The contents of the underground tank T-3 is unknown.

Planned Actions

Based on the above information, the remaining inventory in **Tank 2** will be removed in fiscal year 1996 and managed appropriately based on the results of laboratory analysis. As an interim measure, the tank will be rinsed and filled with closed-cell foam.

A field inspection will be performed on the underground **Tank 3** to determine if it contains inventory. If there is no inventory, the tank will be rinsed and filled it with closed-cell foam. If there is inventory in the underground chamber, the inventory will be sampled and analyzed, removed and managed appropriately based on the results of laboratory analysis. The tank will be rinsed and may be filled with closed-cell foam.

2.0 TANK 10 Building 776
IHSS 132, Radioactive Site - 700 Area Site #4 (776 Tanks C&D)

Background

Tank 10, located outside of Building 730, consists of two 4500 gallon underground concrete tanks. These tanks were used to store process and laundry water and were removed from service in 1982.

The tank system measures about five feet on the north-south axis, 15 feet on the east-west axis, and about 10 feet deep. A sump area measuring about four feet square and one foot deep is located directly under the pumps in each tank. The two tanks are oriented next to each other, one being east of the other. These tanks may be accessed by a four foot square steel diamond plate cover and an 8 inch inspection plate. During a recent field inspection, only part of the tanks could be viewed through the 8 inch inspection port, but the tanks seemed to be in satisfactory condition with the exception of what appeared to be a hole at the bottom of southeast corner of Tank 10 East.

Characterization

Field investigation indicates that the Tank 10 west tank has about two feet of clear liquid and no sludge was observed underlying the liquid. Analytical results of the liquid do not show the presence of volatile organic or other regulated materials in the liquid. Therefore, the removal of inventory from Tank 10 west is not required under this plan.

The Tank 10 East has a clear liquid filling the sump area and approximately 1-3 inches of a moist sludge or residue covering the entire floor of the tank. Analytical results indicate that RCRA metals and organics are contained in the liquid contents of Tank 10 East.

Planned Actions

As previously stated, **Tank 10 West** and its contents will not be managed as a RCRA underground UST; however, because this tank is interconnected with Tank 10 East and to be protective of human health and the environment, this tank will be emptied and filled with closed-cell foam

Tank 10 East's contents will be removed in fiscal year 1996 and managed appropriately based on the results of laboratory analysis. The tank will be rinsed and may be filled with closed-cell foam.

3.0 TANK 14 Building 774
OU10, IHSS 124.1 Radioactive Liquid Waste Storage Tank, 30,000 gallon tank (T-68, Unit 55.14)

Background

Tank 14, located east of Building 774, is a 30,000 gallon underground concrete tank which received waste streams from Building 774. During the field inspection, the manhole cover to the tank was removed to collect samples, but only limited visual inspection of the tank was conducted. The area viewed appeared to be in satisfactory condition. A liquid was observed in the tank and it is estimated that 12-18 inches of liquid remain in the deep end of the tank at the north-west corner of the tank. It is also estimated that the liquid extends in a radius from the northwest corner approximately eight feet. In addition, a sludge covered the base of the tank and also appeared to cover at least the lower four feet of the tank walls. An air bubbler that measures the liquid level was observed in operation in the northwest corner of the tank and appears to keep some of the sludge in suspension.

Tank 14 is a RCRA Interim Status tank.

Characterization

RCRA Unit 55, which includes Tank 14, supports Building 771 which historically generated characteristic (acids and bases) hazardous waste only.

Planned Actions

The inventory from Tank 14 will be removed during fiscal year 1996. It should be noted that these tanks may pose a structural problem to Building 774 if removed and therefore as an interim measure, the closed-cell foam may be used to fill the tank after it is rinsed. Determination on the type of final closure that is applicable will be made at a later date.

4.0 TANK 16 Building 774

OU10, IHSS 124.2 Radioactive Liquid Waste Storage Tank, 14,000 gallon tank (T-66, Unit 55.14)

OU10, IHSS 124.3 Radioactive Liquid Waste Storage Tank, 14,000 gallon tank (T-67, Unit 55.14)

Background

Tank 16 is comprised of two 14,000 gallon underground concrete tanks (T-16 North and T-16 South), abandoned in 1989, which received process waste streams from Building 774. During the field investigation, the manhole covers to each tank were removed to collect samples, but only limited visual inspection was conducted. The areas viewed appeared to be in satisfactory condition. T-16 South contains a sump measuring about 18-24 inches square and about 12 inches deep in the northwest corner. A similar sump is suspected in T-16 North, but could not be visually verified.

A liquid was observed in T-16 South. It is estimated that 12-18 inches of liquid remain in the deep end of the tank at the northwest corner. The liquid extends in a radius from the northwest corner about six feet. A sludge was observed to cover the base of the tank but did not appear to cover the tank walls. A pile of a white/gray crystal material measuring about three feet in diameter with a peak approximately 12 inches high was found directly under the manway opening.

About one to two inches of sludge with no liquids was observed in T-16 North when it was opened on March 16, 1995. About 12 inches of liquid was found in the west end of the tank when it was sampled on May 8, 1995.

Tank 16 (North and South) is a RCRA Interim Status tank.

Characterization

RCRA Unit 55, which includes Tank 16, supports Building 771 which historically generated characteristic (acids and bases) hazardous waste only.

Planned Actions

The liquid will be removed in fiscal year 1996 and managed as RCRA-regulated material. It should be noted that these tanks may pose a structural problem to Building 774 if removed and as an interim measure, closed-cell foam may be added to the tank after it is rinsed. Determination on the type of final closure that is applicable will be made at a later date.

5.0 TANK 40 Building 889
OU9 (Portion of IHSS 121) Original Process Waste Lines (Bldg 889 Holding Tanks)

Background

Tank 40 is located west of Building 889 and is comprised of two underground concrete 1000 gallon tanks underlying a vault measuring approximately 12 feet by 7 feet by 7 feet deep. The structural integrity of the vault appears good, although groundwater/surface water intrusion is noted on the vault walls. About two inches of liquid, presumably water from groundwater and/or surface water intrusion covered the bottom of the vault and filled the underlying tanks. The tanks were deconned/abandoned in 1982.

Characterization

Analytical results of water in the vault confirmed the presence of listed hazardous constituents.

Planned Actions

The inventory will be removed in fiscal year 1996 and managed as RCRA-regulated material. Closed-cell foam may be applied to the tank as an interim measure.

APPENDIX 1

IAG TANK SOURCE REMOVAL PROJECT RINSATE SAMPLING STRATEGY

Tank rinsates generated during the IAG Tank Source Removal Project will be sampled and analyzed from each tank (Tanks T-2, 3, 10, 14, 16, and 40). The data obtained from rinsate sampling events will be utilized to document the effectiveness of the high-pressure rinse performed on the tank internal surfaces. Performance goals may be negotiated with CDPHE to serve as indicators for potential partial closure of tank systems. In other words, if tank rinsate analysis indicates that performance goals have been met or could be met with an additional rinse , then tank system closure would be pursued; if rinsate analysis indicates that performance goals cannot be achieved, then tank closure will be deferred to a later date. Tank source removal, and rinsate sampling will be performed as described below.

TANK SOURCE REMOVAL

Tank contents will be pumped and removed from each tank. The tank internals will then be pressure-washed, in order to remove the gross contamination, heavy deposits, solids, etc. which may be found on tank internal surfaces. The wash water will then be pumped and removed from the tank. It is anticipated that this process may require fairly large volumes of clean water (as much as 50% of the total tank volume). Mechanical cleaning of tank surfaces is not within the scope of this project.

TANK RINSING

Tank rinsing will begin upon completion of the tank source removal process. Tank rinsing will be performed using the pressure-washer and should yield a slightly discolored-to-clear liquid rinsate. Sludges and solid materials should have previously been removed during the source removal process. The liquid rinsate generated during the initial rinse will be sampled and labeled as rinsate #1. After sampling, the remaining liquids will be pumped and removed. The tank will be rinsed and sampled in this manner a minimum of three times, the samples will be labeled as rinsate #2, and rinsate #3, respectively. Additional rinses may be required, as determined by the Project Manager.

ANALYZING RINSATE DATA

Each rinsate sample will be analyzed for gross alpha / beta, and a VOA / metals sweep. The rinsate data will be compiled and plotted on separate graphs. VOA's will be plotted based on only those compounds detected. The sum of those detected compounds will be plotted for each subsequent rinsate sample. Similarly, the sum of only RCRA metals above the detection limit will be plotted. It should be noted that the metal sweep analytical procedure will not produce any results for mercury.

Three samples are necessary in order to reflect any trends in rinsate quality. This process will enable Project Management to quantitatively measure the effectiveness of the tank cleaning/rinsing process. Based on the results, an informed decision can be made as to whether-or-not tank closure is obtainable. The VOA/metal sweep analyses are inexpensive due to the exclusion of QA/QC, and tank rinsing and sampling can be performed in one day which eliminates redundant sample set-up and preparation time, and reduces costs. Since the data will only be utilized as an indicator of "rinse effectiveness", the lack of QA/QC for these samples is not an issue.

Full final sampling of tank rinsate liquids for all constituents of concern can take place at the same time the final rinsate sample is taken. These samples will be held until final determination is made by Project Management. Once again all sampling may be performed in one event, which eliminates significant sample set-up, and preparation charges. See attached Table 1, " IAG UST Rinsate Analytical Program" for a description of the complete Analytical Program for each tank.

TABLE 1
IAG UST FINAL RINSATE SAMPLE ANALYTICAL PROGRAM

Tank	Historical Information[1]	RFI/RI Results[2]	Analytical Program
T-2, T-3	• Acids/Bases; • Solvents; • Radionuclides; • Metals; • Thiocyanate; • Ethylene glycol; • PCBs; • Bleach, Soap; • Blood; and • Hydrogen Peroxide.	• Radionuclides; • Aloclor-1254; and • Acetone, Chloroform, 2-Butanone, Tetrachloroethene, Trichloroethene.	• Radioanalytical: Am, Pu, U, Gross α and β; • EPA-CLP Volatile Organics Target Compound List; • Semi-Volatile Organics By EPA Method 625 Regulated List; and • CLP Target Analyte List (TAL) for Metals.
T-10	• Radionuclides; • Solvents; • Metals; and • Machinery and lubricating oils.	• Radionuclides; • 1,2-Dichloroethene, Acetone, Bis(2-ethylhexyl)phthalate, Tetrachloroethene, Ethylebenzene, m,p-Xylene, o-Xylene, Styrene; and • Chromium, Lead, Selenium, Silver.	• Radioanalytical: Am, Pu, U, Gross α and β; • EPA-CLP Volatile Organics Target Compound List; • Semi-Volatile Organics By EPA Method 625 Regulated List; and • CLP Target Analyte List (TAL) for Metals.

[1] US DOE. 1992. Final Historical Release Report for Rocky Flats Plant, Environmental Restoration Program, and/or
US DOE. 1994. Technical Memorandum No.1 Addendum to Phase I RFI/RI Work Plan, Field Sampling Plan, Operable Unit No.9, Original Process Waste Lines, Environmental Restoration Program.

[2] US DOE. 1995. Draft Data Summary 2, Operable Unit No.9, Outside Tanks. Environmental Restoration Program.

TABLE 1
IAG UST FINAL RINSATE SAMPLE ANALYTICAL PROGRAM (Cont.)

Tank	Historical Information[1]	RFI/RI Results[2]	Analytical Program
T-14, T-16	• Acids/Bases; • Radionuclides; • Metals; and • Other wastes from RFETS processes.	• Radionuclides; and • 1,1,1-Trichloroethane, Acetone, Benzene, Bis(2-ethylhexyl)phthalate, Chlorobenzene, Fluoranthene, Naphthalene, Phenol, Tetrachloroethene, Toluene, m,p-Xylene, o-Xylene, Styrene, Trichloroethene; • Chromium, Lead, Selenium, Silver.	• Radioanalytical: Am, Pu, U, Gross α and β; • EPA-CLP Volatile Organics Target Compound List; • Semi-Volatile Organics By EPA Method 625 Regulated List; and • CLP Target Analyte List (TAL) for Metals.
T-40	• Acids; • Solvents; • Radionuclides (U-238); • Metals; • Detergents; and • Soap and grease from cleaning equipment.	• Radionuclides; • 1,2-Dichloroethane, 1,2-Dichloropropane, Acetone, Bis(2-ethylhexyl)phthalate, Tetrachloroethene, Toluene, Trichloroethene;	• Radioanalytical: Am, Pu, U, Gross α and β; • EPA-CLP Volatile Organics Target Compound List; • Semi-Volatile Organics By EPA Method 625 Regulated List; and • CLP Target Analyte List (TAL) for Metals.

[1] US DOE. 1992. Final Historical Release Report for Rocky Flats Plant, Environmental Restoration Program, and/or US DOE. 1994. Technical Memorandum No.1 Addendum to Phase 1 RFI/RI Work Plan, Field Sampling Plan, Operable Unit No.9, Original Process Waste Lines, Environmental Restoration Program.

[2] US DOE. 1995. Draft Data Summary 2, Operable Unit No.9, Outside Tanks. Environmental Restoration Program.